

THE OHIO JOURNAL OF SCIENCE

VOL. XXXIII

JULY, 1933

No. 4

ANNUAL REPORT

OF THE

OHIO ACADEMY OF SCIENCE

Forty-third Meeting

1933

Organized 1891

Incorporated 1892

Affiliated with the American Association for the Advancement of Science

PUBLICATION COMMITTEE

F. O. GROVER

J. ERNEST CARMAN

S. W. WILLIAMS

Date of Publication, August 10, 1933

TABLE OF CONTENTS.

	PAGE
OFFICERS AND COMMITTEEMEN FOR 1933-34.....	217
REPORT OF THE FORTY-THIRD ANNUAL MEETING:	
Introductory.....	218
Minutes of the Business Meetings.....	219
Scientific Papers, List of.....	232
Report of Officers:	
Secretary.....	237
Treasurer, for 1933.....	238
Report of Committees:	
Executive.....	240
Publications.....	242
Trustees.....	242
Library.....	243
Parks and Conservation.....	247
Fellows.....	248
New Members.....	249
Necrology.....	249
The Administration Board of the Ohio Journal of Science.....	252
Nominating.....	253
Junior Scientific Endeavor.....	254
Resolutions.....	255
PRESIDENTIAL ADDRESS.....	259
SHORTER PAPERS PRESENTED AT THE MEETINGS.....	271

OFFICERS AND COMMITTEES FOR 1933-34.

President

E. LUCY BRAUN

Vice-Presidents

Zoology: NEALE F. HOWARD
Botany: ORVILLE T. WILSON
Geology: WM. A. P. GRAHAM
Medicine: ROBERT A. KEHOE

Psychology: R. S. UHRBROCK
Physics: RAY LEE EDWARDS
Geography: RODERICK PEATTIE
Chemistry: WM LLOYD EVANS

Secretary

WILLIAM H. ALEXANDER

Treasurer

A. E. WALLER

Executive Committee

Ex-Officio: E. LUCY BRAUN, WILLIAM H. ALEXANDER, A. E. WALLER
Elective: R. A. BUDINGTON, JAMES P. PORTER

Board of Trustees

GEORGE D. HUBBARD, term expires.....	1934
HERBERT OSBORN, <i>Chairman</i> , term expires.....	1935
ALPHEUS W. SMITH, term expires.....	1936

Publications Committee

F. O. GROVER, <i>Chairman</i> , term expires.....	1934
J. ERNEST CARMAN, term expires.....	1934
S. W. WILLIAMS, term expires.....	1934

Library Committee

MRS. ETHEL M. MILLER, *Chairman*,
 In charge of Academy Exchanges and Publications

L. B. WALTON, term expires.....	1934
F. O. GROVER, term expires.....	1935
FREDERICK C. BLAKE, term expires.....	1936

Committee on State Parks and Conservation

HERBERT OSBORN, <i>Chairman</i> , term expires.....	1934
EDWARD S. THOMAS, term expires.....	1934
W. E. STOUT, term expires.....	1934
J. ERNEST CARMAN, term expires.....	1935
E. L. WICKLIFF, term expires.....	1935
ROSCOE W. FRANKS, term expires.....	1935
H. C. SAMPSON, term expires.....	1936
EDMUND SECREST, term expires.....	1936
EMERY R. HAYHURST, term expires.....	1936

Academy Representatives on the Joint Administrative Board, Ohio Journal of Science

C. G. SHATZER, term expires.....	1934
EDWARD L. RICE, term expires.....	1935

Academy Representatives on the Save Outdoor Ohio Council

HERBERT OSBORN, term expires.....	1934
E. N. TRANSEAU, term expires.....	1934

Nominating Committee for 1934

WALTER C. KRAATZ	LOUIS D. HARTSON
BERNARD S. MEYER	A. A. ATKINSON
KARL VER STEEG	GEORGE D. HUBBARD
FRED A. HITCHCOCK	WILLIAM LLOYD EVANS

REPORT OF THE FORTY-THIRD ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE.

WILLIAM H. ALEXANDER,
Secretary.

INTRODUCTORY.

The Forty-third Annual Meeting of THE OHIO ACADEMY OF SCIENCE was held on April 13, 14 and 15, 1933, on the charming campus of Ohio's oldest university, namely, OHIO UNIVERSITY, at Athens. This was the first meeting of the Academy in these historic walls and from the large attendance (356 in addition to those who forgot to register!) the selection was obviously a happy one and from the expressions of those present it is safe to say it will not be the fault of the Academy if another annual meeting is not held at this historic center within the next few years. The local executive committee, under the able and enthusiastic leadership of Dr. James P. Porter, did everything possible, it seemed, to amply provide for the needs of all. Two field trips to local points of interest were arranged; one to the Hocking County Park area, of interest to the members of the Sections of Geology and Geography, and the other to the Carbondale Coal Company's coniferous trees reforestation project, of special interest to entomologists and botanists. Ample provision was also made for the entertainment of the lady visitors.

Under the inspiration and able leadership of Dr. William Lloyd Evans, of Ohio State University, the efforts of the new SECTION OF CHEMISTRY to put on an attractive program were notably successful and the response of the chemists of the State enthusiastic, there being an attendance of more than one hundred at the first meeting of the section.

In addition to the large number of State institutions represented on the various sectional programs it is noted with pleasure distinguished representatives from the following institutions outside of the State were present and took part on the program: *University of Virginia, University of Chicago, University of Buffalo, University of New Hampshire, and Harvard University.*

The Annual Dinner on Friday evening (April 14) was, as usual, a most delightful affair, the only matter of serious regret being the demand for reservations exceeded the capacity (227) of the hotel banquet hall and so quite a number of late-comers had to be disappointed. Dr. James P. Porter served most acceptably as toastmaster on this happy occasion and the following program prepared by the local committee was put on immediately after the dinner:

Words of Greeting.....PRESIDENT E. B. BRYAN, Ohio University
 "Onaway, Awake Beloved," (from Hiawatha).....*Coleridge-Taylor*
 PHILIP PETERSON, Tenor

PRESIDENTIAL ADDRESS—"The Innocence and Guilt of Science,"

R. A. BUDINGTON, Professor of Zoology, Oberlin College
 "Surely the Time for Making Songs Has Come".....*Rogers*
 "My Lover Comes A-riding".....*De Leath*
 MISS HELEN HEDDEN

"Weather and Other Predictions,"

W. H. ALEXANDER, Secretary of the Academy;
 U. S. Weather Bureau, Columbus, Ohio
 SOCIAL HOUR

MINUTES OF THE BUSINESS MEETINGS.

(Stenographically Reported.)

First Session: April 14, 1933.

The first business session was called to order by President Budington at 9:08 A. M., in Memorial Auditorium, with a quorum present.

PRESIDENT: The first item of business is the announcement of committees. This is rather difficult because we are not sure just who is here. Dr. J. Paul Visscher, Chairman of the Committee on Membership, will report tomorrow morning. On this committee with Dr. Visscher are Professors Van Cleef and Hibbard. On the Committee on Resolutions are Professors F. C. Blake, E. L. Rice and H. C. Sampson. It seemed at first that the Committee on Necrology would have no special report, but now we learn of two deaths during the past year—Dr. E. B. Williamson and Dr. E. N. Clarkson. I am appointing on that committee Dr. R. C. Osburn, of Ohio State University, and Professor Otis, of Western Reserve.

The Secretary's report was then called for, read, formally approved and ordered filed.

The Treasurer's report was next called for. The Treasurer, A. E. Waller, prefaced the reading of his report by the statement that all bills had been taken care of up to this year and suggested further that the financial affairs of the Academy could probably be more effectively handled if the fiscal year were made to harmonize with that of the *Journal*; that is, be made the calendar year. The Treasurer's report, together with a review or audit of the report by an accountant, was then read.

Discussion.

PROF. F. C. WAITE: The purpose of our Auditing Committee is to check the Treasurer's accounts that someone besides the Treasurer may know just what the situation is and that errors may be checked. It is not a question of honesty or dishonesty. What has been done is that they have selected two men. But those men are not auditors, and the result is not an accountant's audit. It seems best to me that the matter should go on a plan of having a competent accountant do it.

Furthermore, the *Journal*, with whom we have business, and the American Association for the Advancement of Science, with whom we have business, both use the calendar year for their fiscal year, while we do not. It would seem to be desirable that our fiscal year should correspond with theirs. I would offer the following motion to change the by-laws. It is an amendment to the by-laws to replace *Section 3, Chapter V, on Audit*, as follows:

"The fiscal year of the Academy shall be coincident with the calendar year. It shall be the duty of the Executive Committee to secure an audit of all financial accounts by a competent accountant, who shall report to the Executive Committee before the annual meeting."

This report will save some time at the annual meeting. I move its adoption.

PROF. WALLER: I second the motion.

PRESIDENT: We really have two things in front of us now. This is really an item of new business for which we have a specific place on our program. You have heard the motion and its second. Perhaps, in order that we may finish one part of business before we begin on another, we should finish the Treasurer's report.

PROF. F. C. WAITE: Mr. Chairman, I brought this motion forward that it might go immediately into effect—that the report might be referred immediately to the Executive Committee instead of the Audit Committee.

PRESIDENT: Are there comments on this motion to amend?

PROF. STICKNEY: Are we competent to amend the by-laws?

SECRETARY: We are.

PRESIDENT: Are there other remarks to make along this line?

Motion carried.

PROF. F. C. WAITE: I now wish to offer a resolution to bring this amendment into effect. There are two parts to the resolution as follows: First, that for the year 1933, the fiscal year will be from April 1 to December 31; second, that this By-law immediately takes precedence over any present By-law with which it conflicts.

PROF. WALLER: I second the motion.

PRESIDENT: The motion before us is that the period from April 1 to December 31 shall be carried as a special item.

Motion was approved.

PRESIDENT: This disposes of the election by the Academy of an Auditing Committee, such election being now unnecessary.

PROF. E. L. MOSELEY: Should there be a motion for the acceptance of the present report?

PRESIDENT: This brings the amendment into effect immediately, instead of waiting for a year. The next item is Item b, Section 4 of our program.

SECRETARY: We have been following the practice of making the Vice-Presidents of the current year the Nominating Committee for the next year. If the Academy wishes to continue this practice the only motion necessary is one to instruct the Secretary to cast a written ballot for the current Vice-Presidents.

PROF. F. C. WAITE: I move to instruct the Secretary to cast a written ballot for the Vice-Presidents, as listed on the cover of the term program, to be the members of the Nominating Committee at the next annual meeting.

A second to the motion followed; also request for comments by the President. Motion was approved.

SECRETARY: I am pleased to cast a written ballot for the following persons to serve as a Nominating Committee for 1934, viz.:

WALTER C. KRAATZ.....	<i>Zoology</i>
BERNARD S. MEYER.....	<i>Botany</i>
KARL VER STEEG.....	<i>Geology</i>
FRED A. HITCHCOCK.....	<i>Medical Sciences</i>
LOUIS D. HARTSON.....	<i>Psychology</i>
A. A. ATKINSON.....	<i>Physics and Astronomy</i>
GEORGE D. HUBBARD.....	<i>Geography</i>
WILLIAM LLOYD EVANS.....	<i>Chemistry</i>

PRESIDENT: The next item is new business. Is there any new business which anyone has in mind?

PROF. LINDSEY: Because of the impossibility of each of us caring adequately for our valuable collections, it occurred to me, without having had an opportunity to discuss the matter with other interested men, that we might very well consider for the benefit of science in the State the centralization or consolidation of collections to the extent that it may be feasible. Dr. Osborn, who is here, knows more about this than I. I would, however, move the appointment of a committee of three to consider this question of consolidation under state support of the important collections of the State. This should be an economic measure, and it should make it possible for us to maintain centralized collections of our valuable things.

PRESIDENT: Are there comments to make in connection with this move? Professor Osborn, does this appeal to you?

PROF. OSBORN: I think I could second the motion. I don't know, of course, just how it would work out, but it seems a good arrangement, and I second the motion.

PRESIDENT: I wonder whether, since our time is short and our membership here in this meeting is small, we may not take Professor Lindsey's suggestion under consideration and talk it over among ourselves during the day, and then bring the thing up for final action tomorrow when there will be more of us here and when we can handle it a little more intelligently. We may bring this up under unfinished business tomorrow morning.

Is there other new business?

DR. PORTER: The suggestion has been made that after the adjournment of the business session we meet on the steps of the auditorium and have our pictures taken.

PRESIDENT: The group is very small.

DR. PORTER: Quality counts rather than quantity.

PRESIDENT: Does anyone here know whether Prof. Kendeigh has arrived? If there is only one address to be given in our next session, we should have time for the picture.

The President then declared a short recess and members assembled on the front steps of the auditorium where a photographer was in waiting. After the photograph had been made, the members reassembled in the auditorium and the business session was resumed.

The report of the Executive Committee was called for by the President and was read by the Secretary.

PRESIDENT: You have heard the Secretary's account of such business as the Executive Committee has carried out this year. Are there questions or comments? If not, what is your pleasure with reference to this report?

Report formally accepted and ordered filed.

PRESIDENT: The hour when our address in general session should begin is very near at hand. As it happens, we are much disappointed in not having Mr. Bennett with us for his part in this session. A telegram yesterday informed us that he was so engaged with affairs in Washington that he could not come up here. The consequence is that we do have a little more time than we might have otherwise had, but it will still be full. What shall we do with reference to the remaining reports? Can we postpone them until tomorrow?

SECRETARY: I think so, Mr. President.

Meeting adjourned.

Immediately following the adjournment of the First Business Session on Friday, April 14th, the first and only General Scientific Session of the Academy was called to order by the President in Memorial Auditorium at 10:10 A. M. As announced by the President, word had been received that Mr. H. H. Bennett, of Washington, D. C., had been unavoidably detained and could not be present for his address, much to the disappointment of the Academy.*

*However, Mr. Bennett supplied a copy of the address he would have given had he been present and same is published elsewhere in these Proceedings.

—W. H. A.

Accordingly the President introduced Dr. F. C. Waite, of Western Reserve University, who gave a most interesting illustrated lecture on "The Early History of the Microscope."

This was followed by a most interesting lecture, also illustrated, on "Toleration of Low and High Air Temperatures by Birds," by Dr. S. Charles Kendeigh, of the Baldwin Bird Research Laboratory and Western Reserve University, at Cleveland.

Second Session: April 15, 1933.

Meeting was called to order at 8:35 A. M.

PRESIDENT: The first item of business is item b, Section 6, of our program; report of the Publications Committee by Prof. E. L. Moseley.

Prof. Moseley's report was read and followed by the following suggestion in form of motion by Prof. Moseley: "That the Publications Committee be authorized to get an estimate of the cost of the publishing of the new edition of Lynds Jones' *Birds of Ohio* and the decision as to publication be referred to the Executive Committee in conjunction with the Publications Committee."

Motion was seconded and carried.

Report of Trustees of the Research Fund was made by Prof. Herbert Osborn.

PRESIDENT: According to the step which was taken yesterday morning, this financial statement will be passed upon by a competent accountant and the accountant's report passed to the incoming Executive Committee, who will then handle it and consider the account audited properly. This really means, of course, that we are putting into operation the plan of having all Academy accounts audited by an accountant rather than by two or three of our semi-ignorant members. We are going to put all our funds into such form and handle them in that way. It seems as if this is the only business-like way of taking care of our finances. Since this motion was passed yesterday morning, I assume there is nothing further for us in the Academy to do. Is there a report as to grants which were made from the Research Fund for the year, Mr. Osborn?

PROFESSOR OSBORN: No expenditures were made. Other

members think it advisable to let the fund accumulate rather than make grants this year.

PRESIDENT: Whatever may seem best to be done will be decided by the committee on this Fund when the communication goes to them. Does someone move this report be accepted?

Motion made, seconded, and report accepted.

PRESIDENT: The next report is from the Library Committee by Mrs. Ethel M. Miller.

Mrs. Miller read her report and offered a suggestion that members, each of whom had been sent two publications from the Ohio Biological Survey, return the copies if they did not care for them.

PRESIDENT: You have heard the carefully prepared report of Mrs. Miller. Are there questions or remarks? Mrs. Miller has already submitted to the Executive Committee a full financial statement of the funds and expenditures which she has just reviewed. This will be submitted to a professional accountant and then formally accepted by the Executive Committee.

Motion made, seconded, and carried that report be accepted.

PRESIDENT: The next report is from Prof. Osborn again for the Committee on State Parks and Conservation.

Following this report, motion was made, seconded, and carried that it be accepted.

PRESIDENT: We now come to reports of the Special Committees. We will listen to a report on the Election of Fellows by the Secretary.

SECRETARY: After two years' trial, I have the rather settled conviction—and I think this feeling is very largely shared by the present committee—that the 60-day limit for filing the nominations to fellowship is somewhat too long and for that reason the committee decided at its meeting last evening to ask the Academy to amend the rule by making it 30 days instead of 60.

PRESIDENT: The suggestion accomplished this: That the preliminary notice which calls your attention to the nomination of Fellows should be sent out forty-five days before the annual meeting, giving each two weeks to send in nominations. The trouble now is that they practically never come in sixty days ahead, and the probability is that any special requirement will be waived, because otherwise there would be no elections

to be made, but it seems if it is reduced to thirty days, we might be able to stick to it. That would be wholly reasonable. Perhaps sixty days is reasonable too, but it doesn't seem to be working well.

PROF. DELONG: I do not deem the present system of electing members to the Fellowship to be fair and therefore suggest that a special Fellowship Committee be set for the purpose of canvassing the whole membership in an attempt to choose those members who may be eligible and ought to be chosen.

PROF. TASHIRO: Instead of the thirty-day limit for the filing of nominations as suggested by the Committee on the Election of Fellows, why not set a certain line of demarcation, as, for instance, March 10?

PRESIDENT: One difficulty with that would be, I think, that we have to regulate, to a certain degree, the date of our meeting according to the convenience of our host.

PROF. TASHIRO: That would make no difference; just make it one date, no matter when the meeting comes.

PRESIDENT: Under some circumstances, though, you would only have twenty days, and under others you would have forty, depending upon the relation of the date of the meeting and March 10, which you suggest.

DR. MOSELEY: Sometimes our meetings come within the month of March.

PROF. R. C. OSBURN: How far ahead of time is the first announcement prepared and distributed?

PRESIDENT: The suggestion last night was forty-five days ahead.

PROF. R. C. OSBURN: The date in the announcement would be definitely set so that we would know that nominations would have to be by a certain date.

DR. DELONG: I am willing to make a motion that a Fellowship Committee be appointed to nominate all the Fellows who are eligible.

DR. ENGLISH: It would be preferable if each section were instructed to set up for itself a Fellowship Committee, which Committee should have a certain degree of preference and be charged with an annual survey of the section to determine which of its members should become Fellows. I don't see how any person could hope to be familiar enough with two or three interests represented in the Academy, and with the personnel

of the Academy, to enable him to say, by merely seeing a name, whether that person should be a Fellow. I should like to ask Dr. DeLong to substitute this clause in his motion.

DR. DELONG: My idea is that there should be a centralized committee.

PRESIDENT: The Secretary reminds me that that is in effect the situation now.

DR. F. C. WAITE: The present plan of having the Vice-Presidents, ex-officio, act as the Nominating Committee rests on the presumption that they are acquainted with the members of their own sections; that they make the best Committee there is; that they are acting with their own sections and know more about the members in their own sections than any other one person. If you set up another committee, it simply makes *another committee*, and the difficulty of getting members on that committee who will work together is great.

Another thing; this thing of going out and trying to canvass someone who might possibly be made a Fellow is not the right attitude. Fellowship is supposed to be an attribute to outstanding work. This question of trying to make everybody a Fellow decreases the worth of the Fellowship. Often there have been proposals that certain members be solicited for Fellowship who are not eligible. It is embarrassing to have to turn them down after they have been recommended like that. We all know that every additional committee is simply a problem in finding men to serve on it.

PROF. E. L. RICE: I would like to raise the question whether the Academy is agreed whether it is worth while to have a Fellowship at all. As I am a fellow myself, I don't hesitate to make the suggestion that it be discontinued.

DR. DELONG: There are those in our group who are autocrats and desire class distinction. I am not one of these. I do not agree with Dr. Waite's view.

PROF. SMITH: We haven't made a recommendation on Dr. Alexander's suggestion. I move its approval.

Motion seconded and carried.

A MEMBER:* Is it true that the Committee does not have power to nominate Fellows unless the nomination is placed with them? If we give that Committee power to make decisions themselves, it might relieve the situation.

*Name not caught by the stenographer.

THE SECRETARY: Mr. President, may I suggest in reply to the question just asked by the gentleman that the members of the Committee on the Election of Fellows *as individual members*, like any other members, have the right to submit nominations but it would be manifestly farcical for the Committee as a whole to make nominations and then sit in judgment on their fitness. You understand the Academy as a whole has nothing whatever to do with the election of fellows; that duty by constitutional provision is imposed upon this committee. Its action is final.

PRESIDENT: I think they have that privilege as individuals. If no one objects, the next item of business will be the report of the Committee on Memberships by Prof. Visscher.

After the report, a motion was made, seconded, and carried, that the applicants mentioned be elected to membership.

PRESIDENT: The next item is the report on Necrology by Professor Raymond Osburn.

Report read by Professor Osburn.

PRESIDENT: We regret to hear so many names included in this report. What shall we do with this report?

Motion made, seconded, and carried, that it be accepted and filed.

PRESIDENT: The next report comes from representatives on the Joint Administration Board of the Ohio Journal of Science.

In the absence of Dr. Meyer, Chairman of the Board, the report is read by Dr. Rice.

Motion made, seconded and carried that the report be accepted and placed on file.

DISCUSSION.

PROF. RICE: Does that acceptance carry those two recommendations included in that report? Also, does that make official the arrangements we made last year? We can find no record of any adoption of that report other than the printing was carried out. I assume that the acceptance of this report covers both those points.

PROF. ENGLISH: I would like to raise an issue at this point of the relationship of the Academy to the Journal. One dollar and fifty cents of our dues go to the Journal and .50 cents for the cost of the Proceedings. That means the Academy is run on about 50 cents a year aside from the Proceedings and Journal. The Journal is predominantly a Journal of Biological

Science. It probably should be continued as such. I am not raising the question, in any sense, critical of the editorial policy. At the same time, such a Journal inadequately serves the wide variety of interests represented in the Academy. It is true that members should have a general interest in science, and many are receiving other science publications, but, even so, \$2.50 does amount to something. A few of our distinguished members have withdrawn because they did not feel they could meet the dues. Now, if the Academy should subsidize the Ohio Journal, I think we should do it on a flat rate; and I question whether we should automatically tax all the members of the Academy for a Journal which, for most of them is not read—or, I should say, many of them—or needed. I move as an amendment that hereafter the Journal be optional to members of the Academy and that dues be reduced to \$1.00 a year for those who do not receive the Journal, such members to receive a copy of the annual transactions. That still leaves 50 cents for each member as a tax for subsidy of the Journal, a journal which he doesn't receive; but it is important that the Ohio Journal be continued, and such a subsidy as that might be tolerated.

PRESIDENT: Are there further comments to make?

PROF. RICE: Mr. President, I think it rather unfortunate that I should have brought up that technicality that we had no record of the action we discussed last year. What the effect of a cut like that proposed would have on the Journal, is hard to tell. It would at least curtail its size. It would throw the Journal in a state of chaos. As regards the use of the Journal by different sections of the Academy, the Editor was expressing only the other day his desire and ambition to make this Journal of interest to others. The fact that it has been almost purely biological is because no other papers have been submitted for printing.

PROF. SEYMOUR: It is undoubtedly true, as interested as I am in biological science, I frequently find a Journal which contains little of interest. On the other hand, I often find a Journal which is all interesting. Our exchange list is of major interest to every member. If the Journal should be discontinued, our whole exchange list would be wiped out.

PROF. SNYDER: As Editor, I would like to say that we now have many sections in addition to biology. Any article which

we have received other than biological articles, has been printed immediately. I should dislike to see the Journal curtailed. In fact, it is already curtailed. An Academy cut would justify the University in also making a cut.

I think the desirable thing would be to make the Journal available to every section if we can get people to see that articles come in to us. We should be only too glad to publish papers for other sections, as we have, to some extent, during the past year.

DR. F. C. BLAKE: I want to explain why there aren't any physics papers being published. I appreciate the idea of Dr. English. The American Institute of Physics is publishing eight or nine Journals, and that provides us a complete method of publication. Our laboratory work is of a national character, and there is no particular reason for our publishing our papers other than nationally. I have had a policy of turning my Journal back to Mrs. Miller. Others are doing the same thing. We cannot expect to be publishing in the Journal of Science much because of our national outlet, for the reason I have just stated; but, nevertheless, we are heartily in sympathy with the enlargement of the Journal, and I shall do what I can to see that we get a section editor that will deliver more physics papers.

DR. WAITE: I consider this debate out of order. The real question is concerning the report of Dr. Rice.

PRESIDENT: As a matter of fact, I think we voted on the report of Dr. Rice. It was accepted. It was after it was passed that this question came up. We now have before us, of course, the motion of Prof. English. It has been seconded and comments on his motion have been advanced.

I think Prof. Rice has pointed out the seriousness of taking a step of this kind until we really know more of what the consequences would be. I don't think we are familiar enough with the matter to see just what this would mean. It strikes me that it is a legitimate question, and we are not prepared at this session to vote very intelligently upon it. The management of the Journal should be consulted as to what such a move would mean. We are all interested in the Journal to some extent and would not want to handicap it too far.

PROF. BURT: I think it would be unfortunate, perhaps, to take ill-considered action on this at this time, although,

personally, I am somewhat in favor of the proposition. I should like to move this matter be referred to the Executive Committee to canvass the members before the next meeting as to their opinions on the subject, and to go over it with the Publications Committee; that the whole thing be referred to the next annual meeting.

DR. WAITE: I think the Publications Committee should consult with the Executive Committee on this.

DR. ENGLISH: I agree to Prof. Burt's suggestion and wish to assure Dr. Waite that my reason for bringing this matter up at this time is that the acceptance of Dr. Rice's report did not carry with it the continuance of the policy which has been adopted by the Academy from year to year, and I therefore deemed the time appropriate to bring up the matter; I certainly do not wish to have the matter taken as a snap judgment; I believe every member should be canvassed concerning it. I withdraw my motion with consent of the second.

PRESIDENT: I understand that the first motion which was made by Prof. English has been withdrawn, and in place of it we have before us the motion which was made by Prof. Burt with reference to referring this to the Executive Committee and the Joint Administrative Board of the Ohio Journal of Science for investigation, including a canvass of the membership and report at the next annual meeting.

Doctor Rice then raised the question as to just what Committee was referred to, and it was ascertained that the committee meant was the Committee representing the Academy on the Administrative Board of the Journal of Science.

Motion carried.

PRESIDENT: The next report is on the Save Outdoor Ohio Council, to be given by Prof. Herbert Osborn in the absence of Prof. Waller.

Report read, formally accepted and placed on file.

Following the reading of this report pamphlets concerning conservation of forests, land, wild life, etc., were distributed by Dr. F. H. Kreckler.

PRESIDENT: The report of the Nominating Committee will be made by Dr. DeLong.

President called for further nominations in addition to those read by Dr. DeLong. Motion was made, seconded, and

carried, that the Secretary cast a unanimous ballot for the list mentioned in the report.

PRESIDENT: The next thing is unfinished business. One matter left over from yesterday was Dr. Lindsey's motion to establish a central collection.

Dr. Lindsey withdrew motion because of lack of time.

The President called for other business. Report was then read by Dr. Baird on publication of work for junior scientists. Further discussion of the matter was referred to the Executive Committee by unanimous agreement.

PRESIDENT: We are now ready for the report of the Committee on Resolutions by Prof. Blake.

Report was read by Dr. Blake and unanimously approved.

PRESIDENT: Does someone wish to make a motion that the question of the place and time for the next meeting be referred to the Executive Committee?

Motion made, seconded and carried.

SECRETARY: The question of electing an Academy representative on the Council of the American Association for the Advancement of Science and the Academy Conference, also a representative on the Save Outdoor Ohio Council, should also be referred to the Executive Committee.

Accordingly, the matter was referred by formal motion to the Executive Committee with power.

Meeting adjourned, *sine die*, at 10 A. M.

THE SCIENTIFIC SESSIONS.

GENERAL AND SECTIONAL.

The following is a complete list of the addresses and papers presented at the various general and sectional meetings of the Academy as reported to the Secretary:

1. THE PRESIDENTIAL ADDRESS: The Innocence and Guilt of Science,
R. A. BUDINGTON
2. Architecture in Ohio.....F. J. ROOS
3. The Cost of Soil Erosion (by title).....H. H. BENNETT
4. The Early History of the Microscope.....F. C. WAITE
5. Toleration of Low and High Temperatures by Birds..S. CHARLES KENDEIGH
6. Germ-cells and Early Development of Arbacia as Affected by Aspirin,
R. A. BUDINGTON
7. Further Studies of the Nature of the Golgi Apparatus Leading to a
Discontinuance of the Use of the Term.....HOPE HIBBARD

8. Growth and Yolk Formation in the Parthenogenetic Eggs of *Daphnia magna*. HYMAN LUMER
9. Antennal Regeneration of *Daphnia magna*. B. G. ANDERSON
10. Migrations and Aggregations of Paramecia in Response to pH, Carbon dioxide, and Oxygen. EDGAR P. JONES
11. Further Studies on the Behavior of Barnacle Larvae. J. PAUL VISSCHER
12. Organisms Found in 30 c. c. of Material Collected from a Quarry Depression on Kelley's Island, August, 1932. STEPHEN R. WILLIAMS
13. Are Natural Mutations Random Occurrences? WARREN P. SPENCER
14. Some Observations on the Stability of Mutations. ROBERT A. HEFNER
15. Studies on the Common Checkered Skipper. A. W. LINDSEY
16. Ecological Studies of *Argia moesta* Hagen (Odonata: Coenagrionidae) by Means of Marking. DONALD J. BORROR
17. A Study of the Gross Anatomy of the Brain of the Garpike, *Lepisosteus osseus*. TOMAS VAN SICKLE (Read by WALTER C. KRAATZ)
18. Parasites of the Spotted Bass, *Micropterus pseudaplites* Hubbs. RALPH V. BANGHAM
19. The Relative Infestation of Birds by Mallophaga. ROBERT M. GEIST
20. Avian Tuberculosis in the Eastern Song Sparrow. LOUIS B. KALTER
21. Fall and Winter Behavior of Song Sparrows. MRS. MARGARET M. NICE
22. The Red-bellied Water Snake, *Natrix sipedon erythrogaster* (Forster) in Ohio. ROGER CONANT
23. An Experiment in Teaching Freshman Zoology without Required Dissection. ARAVILLA M. TAYLOR
24. Some Field Notes and Junior Scientists. ROBERT L. BAIRD
25. Introductory Remarks: Investigations in the Hydrobiology of Ohio, RAYMOND C. OSBURN
26. Hydrobiological Survey of the Western End of Lake Erie. An Account of the Work and Methods of the Survey Conducted by the Ohio Division of Conservation. E. L. WICKLIFF
27. Summary of Limnological Investigations of Western Lake Erie in 1928, WILBUR M. TIDD
28. Summary of Limnological Investigations of Western Lake Erie in 1929 and 1930. STILLMAN WRIGHT (read by E. L. WICKLIFF)
29. The Crustacea Used as Food by the Young Fishes in Lake Erie, LELA EWERS
30. Summary of Limnological Investigations of Buckeye Lake in 1930, E. L. WICKLIFF
31. The Invertebrate Shore Fauna of Western Lake Erie. F. H. KRECKER
32. Preliminary Limnological Investigations of the Major Impounded Waters of Ohio. LEE S. ROACH
33. The Ecology of an Intermittent Stream. JAMES W. BRANSON
34. The General Effects of Pollution on Ohio Fish Life. MILTON B. TRAUTMAN
35. The Relation of Clumping to the Rate of Oxygen Consumption and Toxic Action of Salts in *Sparganophilus eiseni*, EMMETT ROWLES AND OSCAR TURNER
36. The Effect of Sedimentation on the Rate of Oxygen Consumption in Various Fishes. P. S. SHURRAGER AND EMMETT ROWLES
37. A Study of the Insect Fauna of a Coniferous Reforestation Area in Southeastern Ohio. GEORGE R. EASTERLING
38. Milo G. Williams, Botanist (1804-1880). MARGARET B. CHURCH
39. Introducing the Ohio State University Botanic Garden. A. E. WALLER
40. Light in Relation to the Germination of Certain Seeds. JESSE D. DILLER
41. Hydrogen Ion Relations of Some Ohio Mosses. GILFORD J. IKENBERRY
42. "Bound Water" in Relation to the Cold Resistance of Pitch Pine, BERNARD S. MEYER
43. A Unique Raised Bog at Urbana, Ohio. ROBERT B. GORDON
44. Supernumerary Parts and Adnation in the Flower Parts of *Lycopersicum esculentum*. LEON HAVIS
45. Duplicate Evolution of Peculiar Perianth Structures in the Sedges and Composites. JOHN H. SCHAFFNER
46. Ericales of Western North America. W. H. CAMP
47. The Algae of Oklahoma. CLARENCE E. TAFT

48. Variations in Unicellular Algae.....ELBERT H. AHLSTROM
49. The Vascular Flora of Ashtabula County, Ohio.....LAWRENCE E. HICKS
50. The Distribution of the Tulip Poplar in the Central States,
LEONARD F. KELLOGG
51. Flora in Roof of Upper Freeport Coal at Callahan's Mine, Teegarden,
Ohio.....WILLARD BERRY
52. Further Study of the Drainage History in the Old Steubenville River
Basin.....G. F. LAMB
53. Glacial Boundaries in Northeast-central Ohio.....GEORGE W. WHITE
54. Re-excavated Valleys in Southern Ohio as a Proof of the Lowering
of a Land Surface by Inter-stream Degradation.....JOHN L. RICH
55. New Species from the Silica Shale of Lucas County, Ohio..GRACE A. STEWART
56. An Extension of the Rock Unit Called Silica Shale.....J. ERNEST CARMAN
57. Pre-Illinoian Sediments and Deep Soils on Bed-rock Near Cincinnati,
Ohio.....WALTER H. BUCHER
58. The Relation of Soils to Geology in Adams County, Ohio.
(a) In General.....G. W. CONREY AND A. E. TAYLOR
(b) In the Disturbed Area of Northern Adams County...JOHN T. MILLER
59. Announcement of Plans for the Annual Spring Field Trip...KARL VER STEEG
60. The Role of Forest Cover in the Control of Erosion and Run-off,
EDMUND SECREST
61. Problems in Lower Mississippian Correlations.....PARIS B. STOCKDALE
62. A Plan for Increasing Interest in Geology in Ohio.....RICHARD C. LORD
63. Preliminary Report on the Cambrian Limestone.....ROBERT H. MITCHELL
64. Parker Straths Near Cincinnati.....LOUIS DESJARDINS
65. Buried Channels at Cincinnati as Revealed by Borings.....OTTO GUTENSON
66. Additional Evidence on the Physiographic Development of Straths and
Post-strath Warping.....M. MEREDITH SHEETS
67. The Micro-fauna of the Vanport Limestone in the Youngstown Region,
EDGAR L. STEPHENSON
68. A New Inter-glacial Deposit Near Oxford, Ohio.....J. J. WOLFORD
69. The Black Hand Formation in Knox County, Ohio.....RICHARD C. LORD
70. Sedimentation in Upper Cretaceous Sea of Utah.....EDMUND M. SPIEKER
71. Paleozoic Formations in Virginia.....ARTHUR BEVAN, State Geologist
72. The Upper Roanoke and Greenbrier Basins.....FRANK J. WRIGHT
73. The Physiography of Jehol, North China.....GEORGE B. BARBOUR
74. Devonian Shales of Eastern Kentucky....APPALACHIAN GEOLOGICAL SOCIETY
75. The Work of the Harrisburg Erosion Cycle.....NEVIN M. FENNEMAN
76. Bone-beds and Associated Crinoidal Sands of the Delaware Limestone,
LEWIS WESTGATE AND RICHARD P. FISCHER
77. The Cow-Run Sandstone in East-Central Ohio.....C. F. MOSES
78. Insoluble Residues of Niagaran of Southwestern Ohio.RICHARD A. EDWARDS
79. Late Crystallization in Resorbed Plagioclase Phenocrysts....HAROLD FISK
80. Recurrent Coral Faunas of the Ordovician.....W. G. MEYER
81. Truncation versus Peneplanation.....JOHN L. RICH
82. Boulder Fields of the Northern Appalachians.....KARL VER STEEG
83. Problems of Limestone Cave Origin. (Read by title)....A. C. SWINNERTON
SYMPOSIUM ON ENDOCRINOLOGY.
84. The Effect of the Anterior Pituitary on the Composition of Growth,
DR. M. O. LEE, Harvard University
85. The Thyroid and the Iodine of the Blood.....DR. GEORGE M. CURTIS
86. The Functions of the Adrenal Cortex,
DR. FRANK A. HARTMAN, The University of Buffalo
87. The Male Sex Hormone.....DR. F. C. KOCH, University of Chicago
SYMPOSIUM ON BLOOD DISCRASIAS.
88. Hereditary Factors in Diseases of the Blood.....DR. L. H. SNYDER
89. Nutritional Anemia.....DR. ERNEST SCOTT
90. The Clinical Anemias.....DR. GEORGE NELSON
91. The Problem of White Blood Cell Equilibrium.....DR. C. A. DOAN
92. A New Test to Measure Appreciation of Poetry.....PROF. MELVIN RIGG
93. Profiles of Unsatisfactory College Students.....PROF. C. O. MATHEWS
94. Item Analysis: The Basis for Constructing a Test for Forecasting
Supervisory Ability.....DR. R. S. UHRBROCK

95. An Experiment in Selecting Test Items.....MISS DOROTHY C. ADKINS
96. Rivalry in Young Children.....CLARENCE J. LEUBA
97. A Photographic Study of Emotional Facial Expressions in the Second
Year of Infancy.....HORACE CHAMPNEY
98. The Influence of Organization by the Learner on Permanence of
Learning.....H. B. ENGLISH
99. The Influence of Surface and Tint of Paper on the Speed of Reading,
FRANK H. STANTON
100. Effect of Head Tilt upon Visual Localization in Horizontal Plane,
WINFORD L. SHARP
101. Temporal Factors in the Formation of Conditioned Eyelid Reactions in
Human Subjects.....MR. ARTHUR BERNSTEIN
102. The Influence of Rate and Direction of Change on Comparative Pitch
Judgments.....MR. WILLIAM SCHWARZBEK
103. Some Observations on Learning and Relearning in the Hypnotic Trance
vs. the Waking State.....MR. M. K. WALSH
104. A Preliminary Report on the Fels Study of Fetal Movement,
DR. ROBERT F. WALLACE
105. The Nature of Emotion and its Relation to Anti-Social Behavior,
MR. FRED BROWN
106. Informal Reports Concerning Laboratory Work in Progress.
107. The Theory of Radio Field Intensity Measurements.....D. B. GREEN
108. The Design and Application of a Radio Field Intensity Meter,
RUSSELL V. KELCH
109. Neutrons in the Structure of the Nucleus.....A. LANDE
110. History of the Neutron.....HOMER C. KNAUSS
111. Fluoresence of Chlorophyll (b).....V. M. ALBERS AND H. V. KNORR
112. Demonstration in Mechanical Resonance.....T. D. PHILIPS
113. Crystal Structure of Lithium Sulfate.....JOHN G. ALBRIGHT
114. A Visual Modification of the Sonometer Experiment.....C. E. HOWE
115. A Thermo-electrically Driven Pendulum.....JOHN G. ALBRIGHT
116. Rapid Computation of Energy Distribution in Black Body Radiation,
CEDRIC E. HESTHAL
117. A Symposium on Cultural Physics Courses.
How Can We Make Our Physics Courses Have More Meaning for the
Lay Student?.....R. J. HAVIGHURST
A. Cultural Physics Course at Ohio State University.....H. P. KNAUSS
A Modification of the Traditional Approach to General Physics,
L. W. TAYLOR
The Physical Course at Antioch.....G. E. OWEN
118. Calculation of X-Ray Scattering Coefficients as a Function of the Wave
Length.....L. M. HEIL
119. Additional X-Ray Absorption Coefficients Using the F-P-54 Pilotron,
JOHN E. EDWARDS
120. Some Common Errors in Physics Textbooks.....T. D. PHILIPS
121. The Evolution of the Thermometer. (Demonstration).....EARL H. BROWN
122. The Apparent Effects of Lake Erie on the Weather of Northern Ohio,
ROBERT O. BRINK
123. The Democartography of Ohio.....GUY-HAROLD SMITH
124. Influence of Cincinnati on Agriculture.....W. R. MCCONNELL
125. Yellow River.....GEORGE B. BARBOUR
126. The Geography of Italy's Recent Expansion.....RODERICK PEATTIE
127. Negro Residential Occupance in the Chattanooga, Tennessee, District,
NATHANIEL C. BURHANS
128. Soil Type as a Factor in Crop Distribution in Athens County, Ohio,
G. W. CONREY AND A. H. PASCHALL
129. The Use of Air Photographs in Geographical Studies in Ohio..G. W. CONREY
130. A Map Study of Ohio.....JOHN H. GARLAND
131. Dayton: Geography of a Confluent Site.....ALFRED J. WRIGHT
132. Urban Location *versus* Accessibility.....EUGENE VAN CLEEF
133. Reconnaissance Method in Urban Geography.....MARGARET E. STEVENS
134. Wellington, Ohio: A Rural Village.....WALTER W. RISTOW

135. The Application of the Dead Stop End Point to Titrations with Ceric Sulfate.....D. R. CLIPPINGER AND J. F. CORWIN
136. A Student Problem in Electro-Analysis,
GROVER L. ORR AND KENNETH L. ROBERTS
137. Quantitative Spectroscopic Estimation of the Metals,
W. R. BRODE AND J. G. STEED
138. The Use of the Polarograph in Chemical Analysis.....RICHARD BRADFIELD
139. The Modern Barium Industry.....JAMES R. WITHROW
140. The Present Status of Municipal Water Softening.....C. P. HOOVER
141. The Chemistry Courses in the Small College.....K. G. BUSCH
142. An Electrical Conductivity Apparatus for a Laboratory of General Chemistry.....J. E. DAY AND JAMES K. FARRELL
143. Interfacial Tension and the Phenomenon of Wetting.....HARRY N. HOLMES
144. The Solubility of Silver Oxide in Alkali and in Alkaline Salt Solutions and the Amphoteric Character of Silver Hydroxide,
A. B. GARRETT, F. CUTA AND HERRICK L. JOHNSTON
145. Some Thermodynamic Properties of the Neutral OH Molecule Computed from its Spectra....DAVID H. DAWSON AND HERRICK L. JOHNSTON
146. The Reductivity of Hydrogen. III. Ferric Sulfate.....RAYMOND HOOD
147. Metal Salts of the Alcohols and Alcohol Analogues.....OTIS DERMER
148. Studies on Protochlorophyll. Reduction of Pure Chlorophyll and of Pheophytin.....PAUL ROTHMUND
149. An Alkali Stable Complex Carbohydrate from Aerobactic Aerogenes,
HAROLD M. WHITACRE AND HARVEY V. MOYER
150. New Syntheses in the Olefine Series.....IMAN SCHURMAN AND C. E. BOORD

DEMONSTRATIONS AND EXHIBITS.

1. Limnological Equipment. (Various pieces of equipment used in quantitative plankton work, and other types of limnological investigations.) Exhibited by the Ohio Division of Conservation and Ohio University.
2. Modified Qualitative Plankton Tow Net with Bucket. Exhibited by Lee S. Roach, Uhrichsville High School.
3. Small Birge Closing Quantitative Plankton Tow Net. Exhibited by W. C. Kraatz, University of Akron.
4. Home-made Devices for Use in Mounting Sections. Exhibited by Emory S. James, Ohio Wesleyan University (introduced by Edward L. Rice).
5. A Method for Demonstrating Fruit Flies and Other Small Insects. Exhibited by Warren P. Spencer, College of Wooster.
6. An Exhibit of Certain Groups of Insects of Southeastern Ohio, including Collections of Orthoptera—Butterflies, Velvet Ants, Tiger Beetles, Lady Beetles, and a few rather uncommon Species of Various Other Groups. From the Biology Department, Ohio University, arranged under the direction of Mr. William C. Stehr, Assistant Professor of Biology, Ohio University.
7. The Evolution of the Thermometer, by Earl H. Brown, Antioch College.

REPORTS.

Report of the Secretary.

ATHENS, OHIO, April 14, 1933.

To the Ohio Academy of Science:

Your Secretary is pleased to submit herewith his tenth annual report, very briefly stated. These ten years have brought with them many inevitable changes and have left their marks in many places and on all our faces! Quite a number of those who gathered with us at the little meeting in Oberlin just ten years ago are no longer seen or heard among us! The Secretary recalls as if it were only yesterday the shock of surprise when his beloved and greatly admired friend, the late Dr. Thomas Corwin Mendenhall, as chairman of the Nominating Committee read out, "For Secretary, William H. Alexander, of Columbus!" My greatest ambition and inspiration have been during all these ten years to be worthy of the confidence placed in me by the Academy, with the knowledge and consent of that courtly gentleman and scholar! If he were in our midst this morning would he, could he, say, "Well done, good and faithful servant!" The continued confidence of old friends and the making of new ones constitute the chief reward for the onerous duties of the office.

Our membership for reasons known to all has suffered losses during the year now closing and the recruits have not fully replaced these. Most fatalities occurred at the gate called "Dues," so carefully guarded by a skillful, sharp-shooting Treasurer! As the casualties are not always promptly reported to the Secretary, the two lists are not in perfect agreement at all times. We will therefore await the report of the Treasurer as to the present membership list.

Probably the outstanding events of the year were, first, the sponsoring by the Executive Committee of the Academy of a series of radio talks on popular subjects by members of the Academy extending from January to April, inclusive, more fully noted in the report of the Executive Committee. (See Appendix B.) This effort, of course, imposed considerable work on the Secretary, but in view of the high aims and the ready, hearty response of members, the work was a pleasure. The second event of note was the organization of the *Section of Chemistry*. (See Appendix A.) In this the Secretary played a minor part to be sure, but to have even a very small part in a real event is some satisfaction.

Otherwise, the work of the Secretary has been almost wholly routine and there is neither time nor need for a recounting of monotonous details at this time.

We desire to commend most cordially the earnest and obviously successful efforts of the vice-presidents in searching out and securing such an array of talent for the sectional meetings, as shown on the printed program of this meeting. We believe the Academy was never more firmly established on the high road of useful and helpful service nor looked forward on a brighter future. We bespeak for it the loyal, enthusiastic work and support of every member.

Again, good friends, for your kindly, helpful thoughts, words and deeds, most hearty thanks. For our shortcomings we ask your indulgence, and for the future an encouraging smile!

Respectfully submitted,

W. H. ALEXANDER,
Secretary.

Report of the Treasurer for the Year 1932-1933.

ATHENS, OHIO, April 14, 1933.

To the Ohio Academy of Science:

Despite evident hardship on the part of some individual members of the Academy the payment of dues has been excellent under the present conditions. It is evident that the members of the Academy show a loyalty to an organization which they desire to support. There have been a number of resignations which the Treasurer has had reluctantly to accept. It is to be hoped that they will be counter-balanced by an equal number of new members who will remain with the Academy.

Economies have been effected by not publishing a separate Proceedings and by reducing the amount of printed matter in the Proceedings. The reduction will not become effective until next year, as the present report includes the cost of the Proceedings issued last July.

The investment of the Academy is in the form of Liberty Bonds, of which we have \$1,750.00.

With the economies in the Proceedings, namely, the elimination of the membership list, the elimination of abstracts of papers presented at the meetings and the reduction to the minimum of the printed matter concerning the position of the Academy, it probably will not be necessary to withdraw any funds from the permanent investment at the present time. For this the members of the Academy are to be gratefully congratulated.

RECEIPTS.

Cash balance on hand April 25, 1932.....	\$ 222.19
Receipts from Sale of Publications.....	46.85
Received from A. A. A. S.....	144.50
Dues from Members; Back Dues Collected.....	913.00
Transferred from Trust Account (during Bank Holiday).....	37.65
Interest from Bonds.....	74.41
Deposited by error of Bank to wrong account.....	7.00
Total Receipts.....	\$1,445.60
Total Receipts.....	\$1,445.60
Total Disbursements.....	1,007.45
Cash balance on hand April 1, 1933.....	\$ 438.15

DISBURSEMENTS.

W. H. Alexander, Secretary's Honorarium.....	\$ 100.00
Spahr & Glenn Co., for Programs, 42nd Annual Meeting; Statements, Letterheads, 100 Return Envelopes, Preliminary Announcements, and Radio Program.....	99.67
Roof Stenographic Service, for the Secretary.....	24.67

C. J. Shatzer, Report of Junior Scientific Endeavor.....	23.15
E. M. Spiker, Expenses for Geol. Section, 42nd Annual Meeting.....	5.96
D. M. DeLong, Expenses for Zool. Section, 42nd Annual Meeting.....	1.40
One-cent Postage Stamps, Rose McCabe.....	10.29
H. B. English, Expenses for Vice-President for 42nd Annual Meeting.....	4.00
F. G. Tucker, Expenses for Vice-President for 42nd Annual Meeting.....	7.32
A. T. Evans, Expenses for Vice-President for 42nd Annual Meeting.....	9.00
Shiro Tashiro, Expenses for Vice-President for 42nd Annual Meeting.....	9.40
Herbert Osborn, check credited to account by error of Bank.....	7.00
R. A. Budington, Expenses for Executive Committee, 1932 Meeting.....	4.08
M. E. Stickney, Expenses for Executive Committee for 1932 Meeting....	1.80
J. C. Goodman, "Save Out-Door Ohio" membership Dues.....	12.00
B. S. Meyer, Business Manager, Ohio Journal of Science, for 167 members in the Academy for 1932, at \$1.50 each.....	250.50
R. A. Budington, Expenses for Executive Committee, meeting 1932.....	4.55
W. H. Alexander, Expenses for 1933 Meeting.....	20.00
Transferred to Trust Account (by Bank, during Bank Holiday).....	37.65
Rose McCabe, Secretarial Services for the Treasurer.....	33.50
B. S. Meyer, Business Manager, Ohio Journal of Science, (1932 Pro- ceedings of the Ohio Academy of Science).....	321.17
Checks returned.....	20.00
Tax for writing checks.....	.34
Total Disbursements.....	\$1,007.45

Respectfully submitted,

A. E. WALLER,
Treasurer.

Auditor's Report.

COLUMBUS, OHIO, April 10, 1933.

*Professor A. E. Waller, Treasurer,
The Ohio Academy of Science, Columbus, Ohio.*

DEAR SIR:—Complying with your instructions, I have completed my examination of your records of The Ohio Academy of Science and find the receipts for the period from April 25, 1932, to April 1, 1933, of \$1,223.41, to be correctly accounted for in the statements of The Huntington National Bank, depository for the Academy. Disbursements of \$1,007.45 for the same period have been verified by cancelled checks and voucher charge slips of the Bank and found to be correct. The cash position for the period is as follows:

Cash Balance April 25, 1932.....	\$222.19
Cash Receipts—April 25, 1932, to April 1, 1933.....	\$1,223.41
Cash Disbursements for same period.....	1,007.45
Increase Cash Position.....	215.96
Cash on hand April 1, 1933.....	\$438.15

Since the dates of payment of members dues were missing in a few of the accounts it was not possible for me to verify exactly the dues of \$913.00 as shown in Treasurer's report. I feel certain, however, that all receipts have been properly accounted for.

Respectfully submitted,

JAMES P. CORNETET,
Certified Public Accountant.

Report of the Executive Committee.

By WILLIAM H. ALEXANDER, *Secretary.*

ATHENS, OHIO, April 14, 1933.

To the Ohio Academy of Science:

Your Executive Committee begs to submit through its Secretary the following report of its transactions during the year ending with this meeting, viz.:

The committee has held three meetings as an executive committee and has met in joint session with the Vice-Presidents of the Academy as a Committee on the Election of Fellows.

The first meeting of the Committee was held on October 29, 1932, at the office of the Secretary, with all members present, and by invitation Dr. Herbert Osborn, Editor of the Ohio Journal of Science, and Dean C. G. Shatzer, former chairman of the Committee on Junior Scientific Endeavor. The discussions of the various matters that came before the committee resulted in the following conclusions:

1. That owing to the reduced funds in the treasury the Editor of the Journal should take seriously into consideration the question of reducing the number of pages of the Journal.

2. That (and for the same reason) the publication of abstracts of papers presented at the Annual Meeting of the Academy should be omitted from the published Proceedings, for the present at least.

3. That notwithstanding the obvious merits in the Junior Scientific Endeavor movement as revealed in the fine efforts and report of Dean Shatzer, it was the unanimous opinion of the Committee that owing to a lack of funds to meet and overcome the practical difficulties obviously inherent in the work, as pointed out by Dean Shatzer, the only thing to do is to hold the matter in abeyance for the present at least. And the Committee so recommends. (See p. 290, Proceedings 1932.)

4. Regarding the matter of an "Academy accounting system and custody of funds," etc., referred to this Committee by vote of the Academy at the last Annual Meeting (Proceedings 1932, p. 267), the Committee found itself quite in harmony with the views of the Treasurer as to the need of a better method of auditing the accounts and accordingly authorized the Treasurer to enter into negotiations with the proper department or officials at the Ohio State University and solicit their assistance in devising a suitable method to recommend to the Academy for its approval.

5. As to the question raised by the Chairman of the Library Committee relative to the disposition of funds received from the sale of Proceedings, etc. (see p. 270, Proceedings 1932), the Executive Committee recommends that these funds be credited to the Academy.

6. As to the place for holding the Annual Meeting for 1933 the Committee decided unanimously to accept the offer of the Ohio University, Athens, and the exact date to be left with the Secretary after further negotiations with the Ohio University, assuming some date during or very near the Easter Holidays would be finally agreed upon.

7. The Secretary was instructed to correspond with the officials of the West Virginia Academy of Science with a view to a joint meeting of the two academies if such was thought desirable and practicable and provided further such a joint meeting would be agreeable to the Ohio University.

8. President Budington was unanimously elected to represent the Ohio Academy on the Council of the American Association for the Advancement of Science and on the Academy Conference at the Atlantic City meeting.

9. A subcommittee, consisting of Prof. Alpheus W. Smith, Chairman; President Budington and Secretary Alexander, was named to investigate the feasibility and advisability of the Academy sponsoring the broadcasting of a series of scientific talks or addresses and report back to the full committee at its next meeting.

The second meeting of the committee was held in the office of the Secretary on January 6, 1933, with four of the five members present. At this meeting the following items of business were transacted, viz.:

1. The Treasurer reported progress in his negotiations with Ohio State University authorities relative to a system of auditing and accounting. He was requested to continue his efforts.

2. The Secretary read a letter from the Secretary of the West Virginia Academy of Science relative to a proposed joint meeting of the two academies which said in part: "Our Academy was not in favor of meeting out of the State this year. * * * Perhaps in the future, when the Academy members feel they can afford to travel a little further, we can arrange for a joint meeting."

3. The Secretary reported for the sub-committee on the series of proposed radio talks that Professor Smith had secured the generous co-operation of the Ohio State University in putting on one talk a week from station WEAO and that he (the Secretary) had met with a ready response on the part of members to give such talks and that the series would begin at 7:45 P. M. on January 6, 1933, President Budington being the first speaker. (See Appendix B.)

4. A petition signed by 68 prominent chemists of the State (see Appendix A) asking permission to organize a *Section of Chemistry of the Ohio Academy of Science*, was then laid before the Committee, carefully considered and by a unanimous vote the permission was granted subject to ratification by the Academy, which action we now recommend. The Executive Committee requested Professor William Lloyd Evans, Ohio State University, to serve as the Acting Vice-President of the Section of Chemistry until the annual meeting of 1933.

5. The Committee voted that we should have at least one invited speaker for the annual meeting. Several names were suggested and the Secretary was instructed to correspond with them and make such selection or selections as to him seemed best or possible.

The third meeting of the Executive Committee was a joint meeting with the Vice-Presidents as a Committee on the Election of Fellows, a full report of which will be made later.

The fourth and last meeting was held last evening at Hotel Berry, Athens, Ohio, when it was agreed that:

1. The matter of continuing the series of radio talks should be left with incoming Executive Committee.

2. Membership in the "Save Outdoor Ohio Council" should be continued.

3. That in order to provide for a suitable accounting system, *Section 3, Chapter V of the By-Laws* of the Academy should be so amended as to provide for the audit of all the financial accounts of the Academy by a competent accountant, and that the fiscal year be the calendar year instead of from annual meeting to annual meeting as at present.

4. That the duties now performed by the Publication Committee and the Special Committee on Relations might well be combined under one committee.

5. That there should be a re-statement of the fourth recommendation of the Joint Committee (Publication Committee and Special Committee on Relations) relative to paying for the printing of the Proceedings Number of the Journal. (See p. 287, Proceedings 1932.)

Report of the Publications Committee.

(Informal.)

OBERLIN, OHIO, April 11, 1933.

Mr. W. H. Alexander, 8 East Broad Street, Columbus, Ohio.

DEAR MR. ALEXANDER:—I am sorry to have to report that it will not be possible for me to attend the meeting of the Ohio Academy at Athens this week. Blake and Moseley report that they will also be unable to be present. That will give the Publications Committee a zero for attendance and will make it impossible for a report to be presented by the Publications Committee.

As a matter of fact, the Committee has nothing to report, for its activities have been nil. You have been so good as to see through the press the Proceedings of the last annual meeting and arrange for its publication in the Ohio Journal of Science. Besides the Proceedings there have been no publications by the Academy during the current year. May I ask you to make whatever report seems necessary on the publication of the Proceedings. It seems too bad to burden you with anything more than you already have to carry, but your shoulders are broad, your efficiency is equal to anything, and your kindness is proverbial, so I add another to the impositions which are continually being placed upon you.

With best wishes, I am

Sincerely yours,

FREDERICK O. GROVER,
Head, Department of Botany.

Report of the Trustees of the Research Fund.

COLUMBUS, OHIO, April 1, 1933.

To the Ohio Academy of Science:

As in the preceding year, no grants to individuals have been made, as it seemed desirable still to hold the balance available for possible readjustments of the invested fund. The following summary of the account for 1932-33 shows an invested fund of \$1,737.50 and a balance in uninvested account subject to check of \$228.36.

SUMMARY OF ACCOUNT, 1932-33.

RECEIPTS.

Balance from checking account, April 22, 1932.....	\$ 137.86
Interest receipts from invested funds.....	90.50
Total.....	\$ 228.36

BALANCE.

Balance in checking account.....	\$ 228.36
----------------------------------	-----------

SUMMARY OF ASSETS.

Invested Funds, Bonds and Certificates at face or cost.....	\$1,737.50
Uninvested bank balance, in Ohio National Bank.....	228.36
Total.....	\$1,965.86

The interest payments on bonds which were temporarily suspended have been renewed on a reduced interest basis, and it is believed that payments of interest may be expected regularly hereafter. Since there is now a small balance of uninvested funds we may consider the granting of some small sums for research projects and, unless the Academy favors further building up of the research fund, the Trustees will be ready to receive requests for grants during the coming year.

It may be noted that the interest payments for the year have amounted to a little more than 5% on the invested fund.

(Signed) HERBERT OSBORN, Chairman,
GEO. D. HUBBARD,
L. B. WALTON,

Trustees.

Auditor's Report.

COLUMBUS, OHIO, May 13, 1933.

*Mr. William H. Alexander, Secretary,
The Ohio Academy of Science, Columbus, Ohio.*

DEAR SIR:—I have completed my Audit of the Research Fund of the Trustees of The Ohio Academy of Science and find the same to be correct. The balance on deposit in The Ohio National Bank of \$228.36 has been verified and found correct. The invested funds of \$1,737.50 are found to consist of \$1,300.00 of Fort Hayes 7% Bonds maturing October 15, 1934, and 25 shares of BancOhio Capital Stock.

The 25 shares of BancOhio were purchased November 27, 1931, at \$17.50 per share. The market quotation of this stock today is \$10.00 per share. There is no public market on the Fort Hayes Bonds that I have been able to find, which, perhaps is somewhat due to the proposal and plan as outlined in a letter of March 8, 1932, by the Bondholders Protective Committee. Briefly this plan was to issue Sinking Fund Bonds bearing 5% interest dating the issue January 1, 1932, and maturing the Bonds January 1, 1947.

There is undoubtedly a limited market for these Bonds today and I would suggest that some consideration be given the possibility of disposing of your holdings in exchange for other investments more readily salable and with possibilities for a more rapid recovery in value.

Respectfully submitted,

JAMES P. CORNETET,
Certified Public Accountant.

Report of the Library Committee.

COLUMBUS, OHIO, April 12, 1933.

To the Ohio Academy of Science:

There is little to report this year. The routine work of keeping the mailing list correct, of taking care of the few sales, of claiming the issues of the exchanges that somehow failed to arrive, and of posting issues of our publications to replace those which did not reach their

destinations, have constituted the greater part of the work which has been done during the past year.

Fourteen new exchanges have been secured. One of them is a joint publication of two state academies, Colorado and Wyoming.

The privilege of withdrawing books from the Ohio State University Library is called again to the attention of the members of the Academy. It is learned each year that some of the members, especially the newer ones, do not know that they are entitled to draw out books as individuals if they live at a distance from a college or university library. For those who are associated with a college it is preferred that they draw books through their own library on the inter-library loan plan. There is much material in our library that surely could be of use to the members of the Academy if they would use it.

The sales of publications have been disappointing this year, only slightly more than twenty-five dollars. As the present incumbent has had six good years with the sales ranging from sixty-three dollars to eighty-nine dollars, this seventh year should also have been a year of plenty. It is to be hoped that there will not continue to be six or seven lean years.

As the financial report is so little this year, the chairman of this committee was interested to learn the amounts of former years and found that ten years ago the sales amounted to practically the same as they have this year. A very brief history of the sales record may be of interest. No mention of selling publications is made in any of the Annual Reports of the Academy until 1904 when the Treasurer, Dr. Herbert Osborn, reported the sum of \$5.09 for "publications sold and miscellaneous receipts" during 1903-1904. Then Mr. W. C. Mills was appointed librarian. He reported \$21.43 for 1904-1905, and nearly fifty-nine dollars for his best year, 1911-1912. His total amount for the entire time that he was librarian, 1904-1914, was \$311.69. When the library of the Academy was deposited in the Ohio State University Library, Mr. Mills stated in his last annual report that for many years the sales had not begun to pay the postage necessary for mailing the special papers and annual reports, but now that the University had agreed to pay all postage, the funds received from the sale of publications would be another asset to the Academy. From 1915 to 1925, when the Main Library of the Ohio State University had charge, the sales amounted to \$252.42 for Mr. C. W. Reeder's nine years, and \$65.89 for Miss Alice McKee's two years, making a total of \$318.31 for the eleven years, which was nearly the same amount as the \$316.78 of the previous eleven years. From 1926 on to date the total amount of sales has been \$498.40. Adding the bank dividends of \$32.89 onto this sum, there is a total of \$531.29. The complete total of all the sales of publications for the entire period of nearly thirty years is \$1,166.38. Of this amount, \$316.78 was used for postage, leaving the sum acquired since the Library took charge, of \$849.60, as an asset to the Academy. The original cost of publishing the Special Papers and the Annual Reports has not been taken into consideration. It is mainly the former that are desired by purchasers and all of them except the first two and the last two were published with funds from the Emerson McMillin research fund.

If we do not consider numbers 13 and 15, there is a plentiful supply of each Special Paper except numbers 4, 5, and 6, of which there are 38 copies of No. 4, "The Fishes of Ohio;" 67 copies of No. 5, "The Tabanidae of Ohio," and 28 copies of No. 6, "The Birds of Ohio."

Only 40 papers were sold this year as compared with 129 papers last year, and with 166 the preceding year. The same one which headed the list last year headed it again this year, "The Fishes of Ohio," and for the same reason, which was that they were sold at the Franz Theodore Stone Laboratory to the students of Dr. R. C. Osburn's fish class.

The following financial report is submitted:

RECEIPTS.

Cash balance on hand April 28, 1932.....	\$ 71.55
Collected on 1931-1932 sales.....	.60
Sales for 1932-1933.....	26.65
Bank dividends for 1932.....	2.69
Total Receipts.....	\$101.49

EXPENDITURES.

A. E. Waller, Treasurer, for sales, 1931-1932.....	\$ 41.85
A. E. Waller, Treasurer, on account, 1932-1933 sales.....	5.00
Government two mill tax.....	.10
Total Expenditures.....	\$ 46.95

Balance in bank April 12, 1933.....	\$ 48.14
Cash on hand.....	5.40
Outstanding accounts.....	1.00
Expenditures, 1932-1933.....	46.95
Total.....	\$101.49

SUMMARY OF ASSETS.

Unexpended balance on 1932-1933 sales.....	\$ 21.65
Accumulated bank dividends, 1926-1932.....	32.89
Total Assets.....	\$ 54.54

ANNUAL REPORTS OF PROCEEDINGS AND SPECIAL PAPERS. 1892-1931.

ANNUAL REPORTS.

First to Sixteenth.....	30 cents each
Seventeenth to Twenty-fourth and Twenty-sixth to Thirty-seventh.....	40 cents each
Twenty-fifth.....	75 cents
Thirty-eighth to Forty-first.....	50 cents each

SPECIAL PAPERS.

1. Sandusky Flora. pp. 167. E. L. MOSELEY.....	60 cents
2. The Odonata of Ohio. pp. 116. DAVID S. KELLCOTT.....	60 cents
3. The Preglacial Drainage of Ohio. pp. 75. W. G. TIGHT, J. A. BOWNOCKER, J. H. TODD AND GERARD FOWKE.....	50 cents
4. The Fishes of Ohio. pp. 105. RAYMOND C. OSBURN.....	\$1.00
5. Tabanidae of Ohio. pp. 63. JAMES S. HINE.....	50 cents
6. The Birds of Ohio. pp. 241. LYNDY JONES.....	\$2.00

7. The Ecological Study of Big Spring Prairie. pp. 96. THOMAS A. BONSER.....50 cents
8. The Coccidae of Ohio. I. pp. 66. JAMES G. SANDERS.....50 cents
9. Batrachians and Reptiles of Ohio. pp. 54. MAX MORSE.....50 cents
10. Ecological Study of Brush Lake. pp. 20. J. H. SCHAFFNER, OTTO E. JENNINGS, FRED J. TYLER.....35 cents
11. The Willows of Ohio. pp. 60. ROBERT F. GRIGGS.....50 cents
12. Land and Fresh-water Mollusca of Ohio. pp. 35. V. STERKI.....50 cents
13. *The Protozoa of Sandusky Bay and Vicinity. F. L. LANDACRE.....\$1.00
14. Discomycetes in the Vicinity of Oxford. pp. 54. FRED M. BACHMAN.....50 cents
15. *Trees of Ohio and Surrounding Territory. pp. 122. JOHN H. SCHAFFNER.....\$2.00
16. The Pteridophytes of Ohio. pp. 41. JOHN H. SCHAFFNER.....50 cents
17. Fauna of the Maxville Limestone. pp. 65. W. C. MORSE.....60 cents
18. The Agaricaceae of Ohio. pp. 116. W. G. STOVER.....75 cents
19. An Ecological Study of Buckeye Lake. pp. 138. FREDERICA DETMEERS.....75 cents
20. Flora of the Oak Openings West of Toledo. pp. 56. E. L. MOSELEY.....50 cents
21. The Cedar Cliffs Prairie Opening of the Cincinnati Region. pp. 36. N. MILDRED IRWIN.....60 cents

Address: MRS. ETHEL M. MILLER, Library, Ohio State University, Columbus, Ohio.

Respectfully submitted,

ETHEL M. MILLER,
Chairman.

Auditor's Report.

COLUMBUS, OHIO, May 8, 1933.

*Mr. William H. Alexander, Secretary,
The Ohio Academy of Science, Columbus, Ohio.*

DEAR SIR:—I have completed my audit of the statements submitted by your Librarian, Mrs. Ethel M. Miller, for the period ending April 12, 1933, and find them correct in every detail.

Verification of the cash position reveals \$48.14 on deposit with the Buckeye State Building and Loan Company; \$4.35 cash on hand; \$2.05 in postage stamps. A total of \$54.54.

In my audit of this fund I find the account of the Academy reflecting the deposited funds of \$48.14 is carried in an Installment stock account, which, due to a recent ruling of Buckeye State Building and Loan Company cannot be transferred and is at the present time subject to restricted withdrawals of \$10.00 per month. While this deposit is, in my opinion, in a sound institution, I would suggest it be gotten in a more liquid form should there be a demand for an amount exceeding the present restricted withdrawal of \$10.00.

Disbursements during this period of \$46.95 are properly evidenced by receipts from Professor A. E. Waller, Treasurer.

Respectfully submitted,

JAMES P. CORNETET,
Certified Public Accountant.

*Temporarily out of print.

Report of the Committee on State Parks and Conservation.

To the Ohio Academy of Science:

Your committee is pleased to report that certain definite steps have been made during the year that promise results of permanent value. A meeting of the committee was called for January 5, 1933, by Edward S. Thomas, on request of the Chairman, who was absent from the city. The following members were present: E. Lucy Braun, Edmund Secrest, Emery R. Hayhurst, E. S. Wickliff, Wilbur E. Stout, Roscoe W. Franks, and Edward S. Thomas. There were also present in an advisory capacity, by invitation of committee: Dr. E. N. Transeau, Dr. D. M. DeLong, Dr. C. H. Kennedy, Annette Braun and Robert L. Gordon.

Miss Lucy Braun and Mr. Thomas, State Representatives for Ohio of the Committee on the Preservation of Natural Conditions of the Ecological Society of America, presented an outline of the plans of that society for the preservation of natural biotic communities. The plan, in brief, is for the establishment of inviolate Nature Sanctuaries in suitable localities throughout the United States. Three classes of sanctuaries are proposed, of which only the third class is available in Ohio, since the first two classes contemplate areas in which the original flora and fauna have been undisturbed or practically so.

The following areas or habitats were suggested as desirable for Nature Sanctuaries by various members of the committee: Little Rocky Branch, Hocking County; various ravines along Queer Creek, Old Man's Cave State Park; Roosevelt Game Preserve; Scioto Trail Forest, 8,500 acres; Shawnee Forest, 30,000 acres, including interesting hilltop areas on the tops of the ridges; the spectacular ant mounds of Adams County near Lawshee; Jefferson Preserve; portions of the interesting habitats in the Illinoian drift plains of southern Ohio; Cedar Swamp, Champaign County; the Oak Openings west of Toledo; Adams County dry prairies; Rhododendron areas; Dean Forest; areas along the Lake shore, especially the few dune areas, such as at Bay Point; some of the school lands in Colerain Township, Ross County; West Sister Island, Lake Erie; Tamarack Bogs of northeastern Ohio—Fox Lake, Punderson's L.; some good Beech-Maple area, if any yet to be found; White Pine area, such as at Loudenville; a fine tract of Oak-Liriodendron forest six miles from Gallipolis; some of the canal beds still remaining; areas of wet prairie; the tamarack bog owned by the city of Akron near Lake Rockwell; Fox Lake; an undisturbed area, if any, in the Black Swamp region; a cove with fine Tulip Trees just east of Hanging Rock.

State Forester Secrest tendered his fullest support to the project of preventing damage to floral and faunal areas, and offered any portion of the state forest for the purpose which might be suitable, subject, of course, to the consent of the trustees of the board. He suggested that Little Rocky Branch of Pine Creek would make an ideal preserve, since it was relatively undisturbed and not frequently visited by the public. It was suggested that it would be advisable not to fence off any such preserve in the state forests or erect special signs, until adequate

warden service was available, in view of the fact that the state forest regulations already provide sufficient restrictions against vandalism.

Mr. Wickliff offered the co-operation of the Division of Conservation and suggested that since Roosevelt Preserve was now closed to the public, it would make an ideal area for the preservation of the native flora and fauna.

It was thereupon moved, seconded and carried that the Division of Conservation be invited to make a sanctuary of the Roosevelt Preserve, and Mr. Wickliff was requested to present such invitation to the Conservation Council.

The Academy has been represented on the Save Outdoor Ohio Council by Dr. Waller and the chairman of this Committee and certain legislation sponsored by the Council is still awaiting action in the legislature. While some specific items of special interest to our Academy have apparently been overlooked, several of the bills, if enacted, will prove of advantage in promoting conservation.

Respectfully submitted,

E. LUCY BRAUN,	E. L. WICKLIFF,
ERNEST J. CARMAN,	WILBUR STOUT,
ROSCOE FRANKS,	E. S. THOMAS,
EDMUND SECREST,	HERBERT OSBORN, Chairman,
EMORY R. HAYHURST,	

Report of Committee on Election of Fellows.

ATHENS, OHIO, April 15, 1933.

To the Ohio Academy of Science:

The Committee on the Election of Fellows met at 6:45 P. M., April 14, 1933, at Hotel Berry, Athens, Ohio, with ten members present, three absent. The following members of the Academy whose nominations were in proper form and accompanied by satisfactory documentary evidence of the nominee's scientific achievements, received the required three-fourths vote of the Committee and were accordingly declared duly elected to Fellowship in the Academy, viz.:

DAVID DIETZ	RODERICK PEATTIE
RUSH ELLIOTT	WILLIAM C. STEHR
ROBERT A. KEHOE	

Respectfully submitted,

WILLIAM H. ALEXANDER,
Secretary.

Report of the Membership Committee.

ATHENS, OHIO, April 15, 1933.

To the Ohio Academy of Science:

Your Committee on Membership submits the following applications in due form and recommends the election of the applicants to membership in the Academy, viz.:

BATTELLE MEMORIAL INSTITUTE, 505 King Avenue, Columbus.
BENTLEY, W. B., Ohio University, Athens. *Chemistry*.
BRANSON, WENDELL, 15 Franklin Avenue, Columbus. *Biology*.
BURHANS, NATHANIEL C., 1105 W. Lane Avenue, Columbus. *Geography*.
BUSCH, K. G. A., 2424 Sherwood Road, Columbus. *Chemistry; Geology*.
CUNNINGHAM, HARRY A., 320 E. Erie Street, Kent. *Biology; Science of Education*.
CURTIS, GEORGE M., 4690 Sunbury Road, Columbus. *Medical Sciences; Biological Sciences*.
DOAN, CHARLES A., 324 Fallis Road, Columbus. *Medical and Biological Sciences*.
EVERHART, W. A., Denison University, Granville.
FERNELIUS, W. CONARD, 2084 Neil Avenue, Columbus. *Chemistry*.
GULLUM, FRANK B., 128 Lancaster Street, Athens. *Chemistry*.
HOLLINGSWORTH, MARION, Dept. of Chemistry, O. S. U. *Chemistry*.
HOOD, G. RAYMOND, 516 S. Main Street, Oxford. *Chemistry (Geology)*.
HORN, ROBERT C., 505 Locust Avenue, Zanesville. *Physics*.
INMAN, ELIZABETH, Bowling Green. *Botany; Biology*.
JOHNSTON, HERRICK T., 321 E. Twentieth Avenue, Columbus. *Chemistry; Physics*.
LEUBA, CLARENCE, Antioch College, Yellow Springs. *Psychology*.
MATHENY, WILLIAM A., Box 528, Athens. *Botany*.
MOYER, HARVEY V., Department of Chemistry, O. S. U. *Chemistry*.
PALMER, MAURICE B., Kent State College, Kent. *Chemistry; Physics*.
ROTHEMUND, PAUL (W. K.), Antioch College, Yellow Springs. *Chemistry; Medicine*.
SINNETT, RALPH V., 95 Oak Hill Avenue, Delaware. *Chemistry*.
SONTAG, W. L., Yellow Springs. *Biology; Medicine; Psychology*.
THOMSEN, HARRY L., 207 E. College Street, Oberlin. *Geology; Astronomy; Chemistry*.
VERMILLION, MONROE T., 13 Mound Street, Athens. *Botany; Biology*.
WESP, EDWARD F., 1501 Neil Avenue, Columbus. *Chemistry; Physics*.
WOLFROM, M. L., Department of Chemistry, O. S. U., Columbus. *Chemistry*.
YOHE, G. R., 207 N. Franklin Street, Delaware. *Chemistry*.

Respectfully submitted,

J. PAUL VISSCHER, *Chairman*,
HOPE HIBBARD,
EUGENE VAN CLEEF.

Report of the Committee on Necrology.

ATHENS, OHIO, April 15, 1933.

To the Ohio Academy of Science:

The Committee on Necrology presents the following report:

EDO N. CLAASSEN.

A Charter Member of the Academy and one who took a very active interest in its affairs for many years, Mr. Claassen died at Cleveland, July 12, 1932, at the very advanced age of 99 years. Born and educated in Germany, where he received a degree in pharmacy from the University of Göttingen, he came to Cleveland in 1867 and engaged in the

drug business. He was also city chemist of Cleveland for a number of years in the early 1880's. An able chemist, he contributed to research in various phases of this field and, among other discoveries, he is credited with the isolation of the bitter principle of cranberries.

Always interested in and conversant with various phases of biological work, his chief interest was in botany. He made extensive collections of plants and gave a series of some 10,000 specimens to the Western Reserve University. This collection, which has been made a memorial to him, is especially rich in grasses and liverworts.

During his long and active life, Mr. Claassen published over a hundred papers, of which 31 dealt with Ohio botany and nearly all of these have been published in the Annual Reports of the Academy or in the Ohio Naturalist or Ohio Journal of Science. The first of these publications is dated 1892, the last in 1924 when he was 91 years of age.

His quiet and sincere personality, his broad knowledge and his interest in the work of younger men were outstanding traits, and these in addition to his contributions to science, caused him to be highly appreciated during his forty years of association with the Ohio Academy of Science.

VICTOR STERKI.

Mr. Sterki was born in Solothurn, Switzerland, in 1846 and died at his home in New Philadelphia on January 25, 1933, in the 87th year of his age. He studied at Munich and received the M. D. degree at Bern in 1873. He practised medicine in Switzerland until 1883, when he removed to New Philadelphia.

He was especially interested in Mollusca and became one of the best known students of the land and freshwater species in America. In all 52 of his publications deal with Ohio Mollusca. Most of this work was published in "The Nautilus," but 14 papers are to be found in the Annual Reports of the Ohio Academy, The Ohio Naturalist and the Ohio Journal of Science. The best known of these is "The Land and Freshwater Mollusca of Ohio," Special Paper No. 12 of the Ohio Academy of Science.

Mr. Sterki became a member in 1894 and contributed many papers at the annual meetings. In 1909 he was appointed Assistant Conchologist at the Carnegie Museum at Pittsburgh and later was advanced to Associate Curator of Mollusca, a position which he retained until advancing years and ill health compelled him to retire. His extensive collections are deposited in the Carnegie Museum. He was an enthusiastic collector and a careful and diligent worker, and has made a definite and permanent place for himself in the conchology of America.

F. L. ODENBACH.

The Rev. Frederick L. Odenbach, S. J., a member of the Academy since 1899, died at Cleveland on March 15, aged 75 years. For the past forty years he had been meteorologist and seismologist at the John Carroll University in Cleveland. The influence of Father Odenbach in this field of science was such that by his initiative seismological stations were installed at fifteen Jesuit institutions in the United States

and Canada from 1909 to 1912. His work attracted wide interest and he was well known in his chosen field of research.

MISS WILHELMINE WERDELMANN.

Miss Werdelmann, night supervisor of the University Hospital at Ohio State University, died on February 23, 1933. She was born in Dresden, Germany, served as nurse in that country during the world war and came to America about ten years ago. After a time she took special training and was graduated from the University in 1928. Being a woman of unusual ability, she was rapidly advanced and for the past two years she had entire charge of the hospital during the night. She became a member of the Academy at the 1932 meeting.

E. B. WILLIAMSON.

Edward Bruce Williamson, of Bluffton, Indiana, a member of the Academy since 1897, died at Ann Arbor, Michigan, February 28, 1933, aged 55 years. He was well known to the entomologists of the world, especially as an authority on the Odonata. He was a nephew of Prof. W. A. Kellerman, who contributed so largely to systematic botany in Ohio.

He was graduated at Ohio State University in 1898 at the age of 20, was an assistant curator at the Carnegie Museum of Pittsburgh for a year, taught science in the high school at Salem, Ohio, 1899-1900, and was fellow in zoology at Vanderbilt University the following year.

Though for nearly thirty years the banking business absorbed a large share of his time, he never ceased his scientific work and publications of real worth flowed in continuous series from his pen. His short vacations from business were all spent in the field and he had made collections of dragonflies in Guatemala and several parts of South America as well as in different regions of the United States. He was an indefatigable worker, applying himself at his research usually far into the night.

Since 1930 Mr. Williamson spent the winter months as Curator of Odonata at the Michigan Zoological Museum at Ann Arbor, where his very extensive collections and exhaustive library on Odonata are deposited. The summer was spent at his Iris farm at Bluffton, Indiana, where he had produced many of the finest varieties of Iris developed in the country.

He had a wide knowledge in many fields of thought, and an enthusiastic interest in all phases of natural history which was so contagious that no one could come into contact with him for even a short time without feeling it.

His writings are published chiefly in entomological journals, though several of his earlier papers appear in the Annual Report of the Ohio Academy and the Ohio Naturalist.

RAYMOND C. OSBURN,
Committee on Necrology.

Report of the Administrative Board of the Ohio Journal of Science.

To the Ohio Academy of Science:

Two meetings of the Administrative Board have been held since the submission of the last report.

The first meeting was held November 12, 1932. Present were Messrs. Rice, Transeau and Blake of the Board; Herbert Osborn, Editor, and B. S. Meyer, Business Manager. At this meeting Professor Osborn tendered his resignation as Editor, which was accepted with regret by the Board. Dr. L. H. Snyder, the incumbent Associate Editor, was unanimously elected as Editor for the coming year. All of the other officers of the Journal and the Administrative Board were re-elected for the coming year, except that the position of Associate Editor was left vacant. A list of these officers was included in the preceding report of the Board. Other business at this meeting was of a routine nature.

The second meeting of the Board was held April 8, 1932. Present were Messrs. Rice, Transeau and Blake of the Board; L. H. Snyder, Editor, and B. S. Meyer, Business Manager.

It was agreed by the Board that the Editor should be authorized to accept papers for publication in the Journal out of their order of acceptance, if the sponsors of the papers would defray half of the cost of publication.

Motion was carried by the Board to transmit to the Academy the recommendation that the present arrangements for the printing of the Proceedings by the Journal be continued in force, (page 287, 1932 Proceedings).

Motion was carried by the Board that the Academy act definitely on the recommendations of the Joint Committee on the relation between the Academy and the Journal (pp. 287-288, 1932 Proceedings). No record of any action by the Academy is included in last year's Proceedings.

The following financial report was presented by the Business Manager and audited by a committee consisting of E. L. Rice and E. N. Transeau:

FISCAL YEAR 1932.

(As of March 15, 1933.)

RECEIPTS.

Balance from 1931.....	\$ 336.13
Annual University Allowance.....	900.00
Dues from Ohio Academy of Science.....	600.00
Subscriptions.....	100.40
Authors' Payments for Plates.....	167.93
Sales of Back Numbers.....	12.00
	<hr/>
	\$2,116.46

EXPENDITURES.

Spahr & Glenn Co., Printing first four numbers, Vol. 32.....	\$1,437.90
Envelopes and Office Supplies.....	31.85
Bucher Engraving Co.....	335.34

James R. Geren, Postmaster.....	131.67
Clerical assistance.....	8.00
Purchase of back numbers of Journal.....	1.00
Federal check tax.....	.44
	<hr/>
	\$1,946.20
Balance on hand, March 15, 1933.....	170.26
(Huntington National Bank, Columbus)	<hr/>
	\$2,116.46

All actions of the Administrative Board during the past year have been unanimous.

Respectfully submitted,

B. S. MEYER,
Secretary of the Board.

Report of the Nominating Committee.

ATHENS, OHIO, April 15, 1933.

To the Ohio Academy of Science:

The Committee on Nominations has the honor to submit the following:

President—E. LUCY BRAUN.

Vice-Presidents:

- A. *Zoology*—NEALE F. HOWARD.
- B. *Botany*—ORVILLE T. WILSON.
- C. *Geology*—WILLIAM A. P. GRAHAM.
- D. *Medical Sciences*—ROBERT A. KEHOE.
- E. *Psychology*—RICHARD S. UHRBROCK.
- F. *Physics and Astronomy*—RAY LEE EDWARDS.
- G. *Geography*—RODERICK PEATTIE.
- H. *Chemistry*—WILLIAM LLOYD EVANS.

Secretary—WILLIAM H. ALEXANDER.

Treasurer—A. E. WALLER.

Elective Members, Executive Committee—R. A. BUDINGTON AND JAMES P. PORTER.

Trustee, Research Fund—ALPHEUS W. SMITH.

Publications Committee—F. O. GROVER, J. E. CARMAN, S. W. WILLIAMS.

Library Committee—FREDERICK C. BLAKE.

Committee on State Parks and Conservation—EDMUND SECREST, H. C. SAMPSON AND EMERY R. HAYHURST.

Representatives on Save Outdoor Ohio Council—HERBERT OSBORN AND E. N. TRANSEAU.

Respectfully submitted,

DWIGHT M. DELONG, *Chairman*, SHIRO TASHIRO,
ARTHUR T. EVANS, HORACE B. ENGLISH,
EDMUND M. SPIEKER, F. G. TUCKER,
EUGENE VAN CLEEF,
Committee.

Report of the Committee on Junior Scientific Endeavor.

By C. G. SHATZER.

The Ohio Academy of Science in accord with a recommendation of the committee offered at the April, 1932, meeting, dismissed the committee. The project of encouraging Junior Scientific Endeavor was referred to the Executive Committee for review with power to act.

An opportunity has presented itself to the dismissed committee to promote the project. R. L. Baird and C. G. Shatzer conferred with Mr. B. O. Skinner, Director of the Ohio State Department of Education, and found that he is very much interested in the project. As a result of this conference it is recommended:

1. That a central office be established where high school students may secure information concerning their nature discoveries and to which they may send material for identification.
2. That Mr. Skinner be informed that his offer to print and distribute copies of a 4- or 8-page bulletin is greatly appreciated and that immediate steps will be taken to place such a bulletin at the disposal of high school students.
3. That a member of the Academy be sought who will volunteer his services to conduct the office and prepare the bulletin suggested in Item 2 for the year 1933-34.
4. That specialists in the various fields of science be sought among the members of the Academy who will co-operate with the director in preparing the bulletin material and identify specimens submitted by the students.
5. That the Ohio Academy of Science appropriate an amount not to exceed \$100.00 to defray postage charges for the director's office, transportation of specimens, cost of paper for the bulletin, etc., for the year 1933-34.

MEMORANDUM.

(Supplemental to the Report of the Committee on
Junior Scientific Endeavor.)

Re. visit of Mr. R. L. Baird and Mr. C. G. Shatzer to Mr. B. O. Skinner, March 29, 1933.

Re. co-operation between the Ohio Academy of Science and the Ohio State Department of Education in promoting Junior Scientific Endeavor.

The attitude of Mr. Skinner was excellent.

1. Mr. Baird proposed to Mr. Skinner that a central office be established where high school students might seek information concerning their discoveries and to which they might submit material for identification. Mr. Skinner indicated that the funds are not now available to aid in the support of such an office, but expressed the opinion that favorable consideration would be given the matter when funds were available.

2. Mr. Skinner agreed that the Department of Education would finance the printing and the mailing of a monthly bulletin of high school scientific work to the high schools of the state, if the Ohio Academy of Science would provide the above information, prepare the articles for the bulletin and supply the paper.

3. The Academy ought to grant Mr. R. L. Baird the authority to organize the information center and to secure the co-operation of specialists in the Academy to aid him in identifying material and preparing the bulletin. Mr. Baird's experiences with high school students who are interested in nature studies suggest that this procedure will further greatly the Junior Scientific Endeavor project.

Report of the Committee on Resolutions.

ATHENS, OHIO, April 15, 1933.

THE OHIO ACADEMY OF SCIENCE desires to express to the President and other administrators of OHIO UNIVERSITY and to the members of the local committee its grateful thanks for the hearty and cordial welcome received by its membership at its forty-thirty annual meeting.

Respectfully submitted,

EDWARD L. RICE,
F. C. BLAKE,
(H. C. SAMPSON),
Committee.

Natural Gardens.

The ecological approach to the description of the flora of any region is not particularly new. However, Doctor Wells has a fresh style of writing which at the same time appeals to the educated reader and bears the close scrutiny of the plant scientist.

As the author states in his preface, "The first part of this popular book dealing with our natural gardens is devoted to a general account of the vegetation and habitat of each of the eleven major plant communities of North Carolina. In the second part, an original artificial key to the herbaceous wild-flower plants of the state is presented, accompanied by description of the genera and important species."

The work abounds in illustrations, mostly half-tones, well-chosen and faithfully reproduced. The publication of this volume at this time is made possible through the co-operation of the Garden Club of North Carolina, to whom the book is dedicated, and to the University of North Carolina Press. The latter is deserving of praise for the attractive presswork and substantial binding of a beautiful book.—R. B. GORDON.

The Natural Gardens of North Carolina, by B. W. Wells. xx + 458 pp. Chapel Hill, The University of North Carolina Press. 1933.

APPENDIX A.

A PETITION.

To the Executive Committee of the Ohio Academy of Science, Columbus, Ohio.

We, the undersigned chemists in the State of Ohio, make a common petition to your honorable body for permission to organize a *Section of Chemistry in the Ohio Academy of Science*, viz.:

NAME	INSTITUTION	ADDRESS
WILLIAM LLOYD EVANS.....	Ohio State University.....	Columbus
C. W. FOULK.....	Ohio State University.....	Columbus
W. S. FRAME.....	Ohio State University.....	Columbus
M. L. WOLFROM.....	Ohio State University.....	Columbus
H. L. JOHNSTON.....	Ohio State University.....	Columbus
WALLACE R. BRODE.....	Ohio State University.....	Columbus
EDWARD MACK, JR.....	Ohio State University.....	Columbus
CECIL E. BOORD.....	Ohio State University.....	Columbus
H. V. MOYER.....	Ohio State University.....	Columbus
J. E. DAY.....	Ohio State University.....	Columbus
MARION HOLLINGSWORTH.....	Ohio State University.....	Columbus
EDWARD F. WESP.....	Ohio State University.....	Columbus
G. BRYANT BACHMAN.....	Ohio State University.....	Columbus
W. CONRAD FERNELIUS.....	Ohio State University.....	Columbus
WM. MCPHERSON.....	Ohio State University.....	Columbus
ROY I. GRADY.....	College of Wooster.....	Wooster
JOHN W. CHETTUM.....	College of Wooster.....	Wooster
WM. C. DEARING.....	College of Wooster.....	Wooster
WM. M. MORGAN.....	Mount Union College.....	Mount Union
L. A. PAPPENHOGEN.....	Mount Union College.....	Mount Union
C. A. MOREY.....	Findlay College.....	Findlay
THOMAS W. JORDAN.....	Findlay College.....	Findlay
MARION SHANK.....	Findlay College.....	Findlay
M. P. PUTERBAUGH.....	Ashland College.....	Ashland
PAUL H. FALL.....	Hiram College.....	Hiram
W. B. BENTLEY.....	Ohio University.....	Athens
D. R. CLIPPINGER.....	Ohio University.....	Athens
J. R. MORTON.....	Ohio University.....	Athens
F. B. GULLUM.....	Ohio University.....	Athens
CLARE MARTIN.....	Bowling Green State College.....	Bowling Green
W. E. SINGER.....	Bowling Green State College.....	Bowling Green
LOUIS G. VELER.....	Bowling Green State College.....	Bowling Green
C. S. ADAMS.....	Antioch College.....	Yellow Springs
S. J. BRODERICK.....	Antioch College.....	Yellow Springs
P. W. K. ROTHMUND.....	Antioch College.....	Yellow Springs
J. W. HALDRED.....	Antioch College.....	Yellow Springs
W. A. HAMMOND.....	Antioch College.....	Yellow Springs
JOHN W. BARKER.....	Wittenberg College.....	Springfield
A. F. LINN.....	Wittenberg College.....	Springfield
J. W. MORGAN.....	Wittenberg College.....	Springfield
HENRY S. CILES.....	Wittenberg College.....	Springfield
E. D. SCUDDER.....	Youngstown College.....	Youngstown
W. C. EBAUGH.....	Denison University.....	Granville
W. A. EVERHART.....	Denison University.....	Granville
LOTTIE E. MUNN.....	Lake Erie College.....	Ashtabula
GLADYS K. WARDWELL.....	Lake Erie College.....	Ashtabula
K. G. BUSCH.....	Capital University.....	Columbus
GROVER L. ORR.....	Capital University.....	Columbus
J. G. RALSTON.....	Muskingum College.....	New Concord
P. E. CLARK.....	Muskingum College.....	New Concord

NAME	INSTITUTION	ADDRESS
C. B. RUTENBER	Kenyon College	Gambier
W. H. COOLIDGE	Kenyon College	Gambier
W. A. MANUEL	Ohio Wesleyan University	Delaware
G. R. YOKE	Ohio Wesleyan University	Delaware
R. V. SINNETT	Ohio Wesleyan University	Delaware
JUNIA E. McALISTER	Ohio Wesleyan University	Delaware
J. R. HARROD	Ohio Northern University	Ada
ROBERT C. GIBSON	Ohio Northern University	Ada
H. C. BRILL	Miami University	Oxford
C. W. KREGER	Miami University	Oxford
CARL N. WEBB	Miami University	Oxford
AUGUST FRUEHAN	Miami University	Oxford
G. RAYMOND HORD	Miami University	Oxford
A. LAWRENCE CURL	Miami University	Oxford
C. F. RUMOLD	Kent State College	Kent
MAURICE B. PALMER	Kent State College	Kent
A. W. COVEN	Kent State College	Kent
ALFRED B. GARRETT	Kent State College	Kent
CLARENCE L. COOK	Kent State College	Kent
L. A. WEINLAND	Otterbein College	Westerville
A. J. ESSELSTYN	Otterbein College	Westerville

APPENDIX B.

RADIO TALKS.

The following is a list of the radio talks sponsored by the Ohio Academy of Science and given by members of the Academy through the generous courtesy of The Ohio State University Broadcasting Station, WEAO, each Friday, between 7:45 and 8:00 P. M. from January 6 to April 28, 1933.

- January 6—PRESIDENT R. A. BUDINGTON, Oberlin College, Oberlin. Topic: *"Why Ohio is Interesting."*
- 13—HARLAN T. STETSON, Perkins Observatory, Delaware. Topic: *"The Perkins Observatory as a Scientific Institution."*
- 20—JAMES R. WITHROW, Ohio State University, Columbus. Topic: *"What is Gasolene? From Whence Does it Come? How Manufactured, Tested and Controlled?"*
- 27—C. G. SHATZER, Dean, Wittenberg College, Springfield. Topic: *"The Geography of the Ohio Area."*
- February 3—L. W. TAYLOR, Oberlin College, Oberlin. Topic: *"The Cosmic Ray."*
- 10—ALLYN C. SWINNERTON, Antioch College, Yellow Springs. Topic: *"Caves."*
- 17—ONDESS L. INMAN, Antioch College, Yellow Springs. Topic: *"The Green Leaf."*
- 24—EUGENE VAN CLEEF, Ohio State University, Columbus. Topic: *"The Finns in Ohio."*
- March 3—CHARLES A. DOAN, Ohio State University, Columbus. Topic: *"The Romance of Modern Medical Exploration."*
- 10—FRANK J. WRIGHT, Denison University, Granville. Topic: *"The Proposed Shenandoah National Park."*
- 17—ALLEN C. CONGER, Ohio Wesleyan University, Delaware. Topic: *"Snake Tales."*

- March 24—JAMES P. PORTER, Ohio University, Athens. Topic: "*Recent Studies in the Psychology of Personality.*"
- 31—W. A. MANUEL, Ohio Wesleyan University, Delaware. Topic: "*Old King Coal.*"
- April 7—EMERY R. HAYHURST, State Board of Health, Columbus. Topic: "*Air Conditions and Health.*"
- 14—DAVID C. WARNER, Executive Secretary, State Water Conservation Board. Topic: "*Water Conservation in Ohio.*"
- 21—ARTHUR W. LINDSEY, Denison University, Granville. Topic: "*Human Futures.*"
- 28—E. H. JOHNSON, Kenyon College, Gambier. Topic: "*Science and Reconstruction.*"

BOOK NOTICES.

Hormones—the Tides of Life.

Knowledge of the complicated and interesting functions of the endocrine glands is increasing so rapidly that it is difficult for one not directly concerned in the experimental work to keep up with the advances. It is very much worth while, therefore, to have available this masterly and dispassionate account of the marvels of modern endocrinology. The layman will find it clear and readable, while the scientist will be struck with the technical implications which he can read into every chapter. It is essential that the biologist, at least, should avail himself of such guide-posts as this summary.—L. H. S.

The Tides of Life, by R. G. Hoskins. xi + 352 pp. New York, W. W. Norton and Co. 1933.

The Depths of the Earth.

This contribution to the knowledge of igneous rocks and the depth of the earth is divided into three main parts. Part I constitutes about a quarter of the book and deals with the various types and phrases of igneous rocks. Part II, which is about half of the book, discusses in detail Daly's theory of the make up of the earth. Part III, a little over a quarter of the book, considers the application of the general theory and certain rock clans. In Part II there is much speculation which is however "larded" with many facts.

To those familiar with Professor Daly's work little need be said. To those unfamiliar with his work, this is, like his other writings, both stimulating and valuable.—W. BERRY.

Igneous Rocks and the Depths of the Earth, by Reginald Aldworth Daly. xvi + 598 pp. New York, The McGraw-Hill Book Co. 1933.

Historical Geology.

The third edition of Schuchert's Historical Geology is for the most part rewritten, and in this edition Dunbar is the junior author. This edition does not supersede that of 1924, although it supplements the early edition in being more up to date; it is not as technical and not quite as advanced. The handling is such that details are grouped around principles so that the student has something upon which to use the varied facts. The authors and John Wiley and Sons have given us a text which is well handled on both parts and one which should enjoy such reception as was received by their earlier efforts.—W. BERRY.

A Textbook of Geology. Part II, Historical, by Charles Schuchert and Carl Dunbar. 3rd ed. vii + 551 pp. New York, John Wiley and Sons. 1933.